

**REMARKS**

Reconsideration and allowance of the above-identified application are respectfully requested.

Claims 1-6, 8-26, 28-43, 45-63, 65-74 are currently pending, wherein claims 1, 8, 9, 13, 18, 28, 29, 33, 38, 45, 46, 50, 55, 65, 66 and 70 are independent. Claims 1, 8, 9, 13, 15-25, 28, 29, 33, 35-38, 45, 46, 50, 52-62, 65, 66, 70-74 have been amended. Claims 7, 27, 44 and 64 have been canceled. Claims 13, 33, 50 and 70 have been amended merely to write these claims in independent form, including all of the limitations of the base claim and any intervening claims. These amendments do not narrow or otherwise limit the scope of the claims and are fully supported by the present application. No new matter has been introduced by way of these amendments.

Applicant notes with appreciation the characterization by the Patent Office of the allowability of claims 9, 29, 46 and 66 if rewritten or amended to overcome the objections cited in the present Office Action.

Applicant respectfully requests that the Patent Office change the Attorney Docket No. from "MP0027" to "MP0072".

In the first section of the Office Action, the drawings are objected to under 37 C.F.R. 1.84(p)(5), because the drawings include reference signs not mentioned in the detailed description, particularly reference sign 112 of Figure 1 and reference sign 312 of Figure 3. Applicant hereby amends the detailed description to include a description of the reference sign 112 of Figure 1 (now referred to in the text as "adder 112") and reference sign 312 of Figure 3 (now referred to in the text as "adder 312"). The amendments to the detailed description are fully supported by the present application. No new matter has been

introduced by way of these amendments. Accordingly, reconsideration and withdrawal of these grounds of objection are respectfully requested.

In the third section of the Office Action, claims 7-9, 13, 15-17, 27-29, 33, 35-38, 44-46, 50, 52, 64, 66, 70 and 73-74 are objected to, because of the informalities listed in the third section of the Office Action. These objections are respectfully traversed.

According to M.P.E.P. § 2173.02,

[t]he examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph, is whether the claim meets the threshold requirements of clarity and precision, *not* whether more suitable language or modes of expression are available. . . . Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to applicants to improve the clarity or precision of the language used, *but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement.* [M.P.E.P. § 2173.02 (emphasis added)]

Given the "latitude in the manner of expression and the aptness of terms" afforded to the Applicant, it is respectfully submitted that the aforementioned claims are clear and precise and fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

Consequently, Applicant respectfully submits that there is no statutory basis for the objections to the claims based on "informalities."

However, to facilitate prosecution in the present application, Applicant hereby amends claims 7-9, 13, 15-17, 27-29, 33, 35-38, 44-46, 50, 52, 64, 66, 70 and 73-74 merely to address the informalities noted by the Patent Office. These amendments do not narrow or otherwise limit the scope of the claims, are not made for any purpose related to patentability or to satisfy any statutory requirement, and are fully supported by the present application. No new matter has been introduced by way of these amendments. In addition, Applicant has

reviewed all claims of the present application and made appropriate amendments where necessary merely to ensure that the aforementioned informalities are addressed in all claims of the present application. Accordingly, reconsideration and withdrawal of these grounds of objection are respectfully requested. Applicant respectfully submits that claims 9, 29, 46 and 66 are allowable.

In the fourth section of the Office Action, claims 19-25, 57-62 and 71 are rejected under 35 U.S.C. § 112, second paragraph, for alleged indefiniteness. In particular, in claims 19-25 and 57-62, the phrase “said feedforward equalizer” lacks clear antecedent basis. Applicant hereby amends claims 19-25 and 56-62 to replace the phrase “feedforward equalizer means” with “high-pass filtering means.” In addition, claim 71 recites an Ethernet transceiver according to claim 33, although claim 33 recites a signal processing apparatus. Applicant hereby amends claim 71 to change its dependency to claim 70. These amendments are fully supported by the present application and no new matter has been introduced by way of these amendments. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

Applicant would like to thank Examiner Young Tse for the personal interview conducted on July 12, 2004. In compliance with M.P.E.P. § 713.04, the substance of that interview is incorporated in the foregoing amendments to the claims and in the following remarks.

During the interview, the rejection of claims 1-6, 8, 10-13, 15-22, 24-26, 28, 30-33, 35-43, 45, 47-50, 52-63, 65, 67-70 and 72-74 under 35 U.S.C. § 102(b) as allegedly being anticipated by Sayar (U.S. Reissue Patent No. RE34,206, hereinafter “Sayar”) was discussed. No agreement was reached. This rejection is respectfully traversed.

Applicant would like to thank the Patent Office for the suggested amendments to independent claims 1, 8, 18, 28, 38, 45, 55 and 65 to overcome the rejection based on Sayar. Applicant hereby amends claims 1, 8, 18, 28, 38, 45, 55 and 65 in the manner suggested by the Patent Office. Support for these amendments can be found at least on page 8, lines 16-23, and Figure 8 of the present application. No new matter has been introduced by way of these amendments. For at least the foregoing reasons, it is respectfully submitted that Sayar does not anticipate the subject matter of independent claims 1, 8, 18, 28, 38, 45, 55 and 65.

Dependent claims 2-6, 10-12, 16, 17, 19-22, 24-26, 30-32, 36, 37, 39-43, 47-49, 53, 54, 56-63, 67-69, and 72-74 variously depend from claims 1, 8, 18, 28, 38, 45, 55 and 65, and are, therefore, patentably distinguishable over Sayar for at least those reasons stated above with regard to claims 1, 8, 18, 28, 38, 45, 55 and 65.

With respect to the rejection of claims 13, 33, 50 and 70, it is respectfully submitted that Sayar does not disclose the feature of a high-pass filter comprising a FIR filter, wherein the FIR filter comprises M taps for filtering precursor ISI, one main tap and N taps for filtering postcursor ISI, and *an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI*. Sayar discloses that “[t]he digitized samples of the received analogue signal, from the output of the decimator 120, are filtered by high pass receiver filter 126, which serves as a feed-forward equalizer and enhances high frequencies.” [Sayar, column 5, lines 15-18] However, it is respectfully submitted that Sayar does not disclose any mechanism for adapting the taps of high pass receiver filter 126, and particularly no adaptive control circuit to adapt M taps for filtering precursor ISI and N taps for filtering postcursor ISI. Therefore, it is respectfully submitted that Sayar does not anticipate the subject matter of claims 13, 33, 50 and 70.

In addition, contrary to the assertions of the Patent Office, it is respectfully submitted that the feature of an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI is not "well known in the decision feedback equalizer art," and not shown in prior art Figures 1 and 2 of the present application.

If this rejection is repeated, the Patent Office is requested to specifically point out where Sayar or Figure 1 or 2 of the present application discloses the feature of an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI, and Applicant respectfully requests that the Patent Office supply a reference supporting its assertion that such a feature is "well known in the decision feedback equalizer art."

Dependent claims 15, 35, 52, and 72 variously depend from claims 13, 33, 50 and 70, and are, therefore, patentably distinguishable over Sayar for at least those reasons stated above with regard to claims 13, 33, 50 and 70.

For at least the foregoing reasons, it is respectfully submitted that Sayar does not anticipate the subject matter of claims 1-6, 8, 10-13, 15-22, 24-26, 28, 30-33, 35-43, 45, 47-50, 52-63, 65, 67-70 and 72-74. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

During the interview, the rejection of claims 1-6, 8, 10-13, 15-22, 24-26, 28, 30-33, 35-43, 45, 47-50, 52-63, 65, 67-70 and 72-74 under 35 U.S.C. § 102(b) as allegedly being anticipated by Fertner (U.S. Patent No. 5,793,801, hereinafter "Fertner") was discussed. No agreement was reached. This rejection is respectfully traversed.

Applicant would like to thank the Patent Office for the suggested amendments to independent claims 1, 8, 18, 28, 38, 45, 55 and 65 to overcome the rejection based on Fertner.

Applicant hereby amends claims 1, 8, 18, 28, 38, 45, 55 and 65 in the manner suggested by the Patent Office. Support for these amendments can be found at least on page 8, lines 16-23, and Figure 8 of the present application. No new matter has been introduced by way of these amendments. For at least the foregoing reasons, it is respectfully submitted that Fertner does not anticipate the subject matter of independent claims 1, 8, 18, 28, 38, 45, 55 and 65.

Dependent claims 2-6, 10-12, 16, 17, 19-22, 24-26, 30-32, 36, 37, 39-43, 47-49, 53, 54, 56-63, 67-69, and 72-74 variously depend from claims 1, 8, 18, 28, 38, 45, 55 and 65, and are, therefore, patentably distinguishable over Fertner for at least those reasons stated above with regard to claims 1, 8, 18, 28, 38, 45, 55 and 65.

With respect to the rejection of claims 13, 33, 50 and 70, it is respectfully submitted that Fertner does not disclose the feature of a high-pass filter comprising a FIR filter, wherein the FIR filter comprises M taps for filtering precursor ISI, one main tap and N taps for filtering postcursor ISI, and *an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI*. Fertner discloses that

[t]he output of the adaptive gain controller is provided to a feedforward filter 56 which in physical terms enhances high frequencies of pulses in the received signal which translates into an increase in the steepness or slope of the rising edge of the digital pulse. In functional terms, known digital communications systems refer to this feedforward filter 56 as a precursor filter because its purpose is to suppress the precursor portion of received pulses.  
[Fertner, column 7, lines 57-65]

However, it is respectfully submitted that Fertner does not disclose any mechanism for adapting the taps of feedforward filter 56, and particularly no adaptive control circuit to adapt M taps for filtering precursor ISI and N taps for filtering postcursor ISI. Therefore, it is

respectfully submitted that Fertner does not anticipate the subject matter of claims 13, 33, 50 and 70.

In addition, contrary to the assertions of the Patent Office, it is respectfully submitted that the feature of an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI is not "well known in the decision feedback equalizer art," and not shown in prior art Figures 1 and 2 of the present application.

If this rejection is repeated, the Patent Office is requested to specifically point out where Fertner or Figure 1 or 2 of the present application discloses the feature of an adaptive control circuit to adapt the M taps for filtering precursor ISI and N taps for filtering postcursor ISI, and Applicant respectfully requests that the Patent Office supply a reference supporting its assertion that such a feature is "well known in the decision feedback equalizer art."

Dependent claims 15, 35, 52, and 72 variously depend from claims 13, 33, 50 and 70, and are, therefore, patentably distinguishable over Fertner for at least those reasons stated above with regard to claims 13, 33, 50 and 70.

For at least the foregoing reasons, it is respectfully submitted that Fertner does not anticipate the subject matter of claims 1-6, 8, 10-13, 15-22, 24-26, 28, 30-33, 35-43, 45, 47-50, 52-63, 65, 67-70 and 72-74. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

During the interview, the rejection of claims 14, 23, 34, 51 and 71 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sayar in view of Samueli et al. (U.S. Patent No. 6,178,198, hereinafter "Samueli") was discussed. No agreement was reached. This rejection is respectfully traversed.

Dependent claims 14, 23, 34, 51 and 71 variously depend from claims 13, 18, 33, 50 and 70, and are, therefore, patentably distinguishable over the combination of Sayar and Samueli for at least those reasons stated above with regard to claims 13, 18, 33, 50 and 70.

For example, with respect to the rejection of claims 14, 34, 51 and 71, as acknowledged by the Patent Office, it is respectfully submitted that Sayar does not disclose any mechanism for limiting the taps of high pass receiver filter 126, and particularly no limiter for each of N taps (for filtering postcursor ISI) to limit the range of adaptation of the N taps. Therefore, it is respectfully submitted that Sayar does not render the subject matter of claims 14, 34, 51 and 71 obvious.

Samueli discloses a system for, and method of, converting analog signals received at a client from a repeater to corresponding digital signals. According to Samueli, and as illustrated in Figure 5, the pre-cursor and post-cursor responses (resulting from signal degradations) in the digital signals are respectively inhibited by a feed forward equalizer and a decision feedback equalizer. A high-pass filter and a tail canceller also inhibit the post-cursor response of the digital signals by limiting the *time duration* of the post-cursor response. [see Samueli, column 2, lines 41-44] In particular, Samueli discloses that

[t]he high pass filter 100 operates to block the passage of the low frequency signals which constitute a significant portion of the tail 126. As a result of the operation of the high pass filter 100, the length of the tail 126 is significantly reduced as indicated at 128 in FIG. 7. As will be seen schematically by a comparison of FIGS. 6 and 7, the number of taps is reduced from approximately fifty (50) in FIG. 6 to approximately (twenty) 20 in FIG. 7 because of the inclusion of the high pass filter 100 in FIG. 5. [Samueli, column 9, lines 34-46]

Thus, although Samueli discloses that the *time duration* of the post-cursor *response* is limited, it is respectfully submitted that Sumueli does not disclose or suggest that the each of

the *taps* of the high pass filter is limited in the range of its adaptation by a respective limiter. Consequently, it is respectfully submitted that Samueli does not address the above-identified deficiencies of Sayar.

If this rejection is repeated, the Patent Office is respectfully requested to specifically point out where Samueli discloses that the each of the taps of the high pass filter 100 has a limiter to limit the range of adaptation of each tap.

In addition, according to M.P.E.P. § 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings."

[M.P.E.P. § 2143] In other words, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art." [M.P.E.P. § 2143.01] Since neither Sayar nor Samueli disclose or suggest numerous features recited in claims 14, 23, 34, 51 and 71, it is respectfully submitted that there is no teaching, suggestion or motivation, either explicitly or implicitly, to combine the references in the manner suggested by the Patent Office. Consequently, it is respectfully submitted that the Patent Office has not established a *prima facie* case of obviousness. For at least the aforementioned reasons, it is respectfully submitted that the combination of Sayar and Samueli does not render claims 14, 23, 34, 51 and 71 unpatentable.

For at least the foregoing reasons, it is respectfully submitted that the combination of Sayar and Samueli does not render the subject matter of claims 14, 23, 34, 51 and 71 obvious.

Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

During the interview, the rejection of claims 14, 23, 34, 51 and 71 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fertner in view of Samueli was discussed. No agreement was reached. This rejection is respectfully traversed.

Dependent claims 14, 23, 34, 51 and 71 variously depend from claims 13, 18, 33, 50 and 70, and are, therefore, patentably distinguishable over the combination of Fertner and Samueli for at least those reasons stated above with regard to claims 13, 18, 33, 50 and 70.

For example, with respect to the rejection of claims 14, 34, 51 and 71, as acknowledged by the Patent Office, it is respectfully submitted that Fertner does not disclose any mechanism for adapting the taps of feedforward filter 56, and particularly no limiter for each of N taps (for filtering postcursor ISI) to limit the range of adaptation of the N taps. Therefore, it is respectfully submitted that Fertner does not render the subject matter of claims 14, 34, 51 and 71 obvious.

As discussed previously, Samueli discloses that the *time duration* of the post-cursor *response* is limited. Although Samueli discloses that the high pass filter reduces the post-cursor response, it is respectfully submitted that Samueli does not disclose how the adaptation of the individual taps of the high pass filter is controlled. Therefore, it is respectfully submitted that Samueli does not disclose or suggest that the each of the *taps* of the high pass filter is limited in the range of its adaptation by a respective limiter. Consequently, it is respectfully submitted that Samueli does not address the above-identified deficiencies of Fertner.

If this rejection is repeated, the Patent Office is respectfully requested to specifically point out where Samueli discloses that the each of the taps of the high pass filter 100 has a limiter to limit the range of adaptation of each tap.

In addition, since neither Fertner nor Samueli disclose or suggest numerous features recited in claims 14, 23, 34, 51 and 71, it is respectfully submitted that there is no teaching, suggestion or motivation, either explicitly or implicitly, to combine the references in the manner suggested by the Patent Office. Consequently, it is respectfully submitted that the Patent Office has not established a *prima facie* case of obviousness. For at least the aforementioned reasons, it is respectfully submitted that the combination of Fertner and Samueli does not render claims 14, 23, 34, 51 and 71 unpatentable.

For at least the foregoing reasons, it is respectfully submitted that the combination of Fertner and Samueli does not render the subject matter of claims 14, 23, 34, 51 and 71 obvious. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

All of the rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and a notice to that effect is earnestly solicited. Should the Examiner have any questions regarding this response or the application in general, the Examiner is urged to contact the Applicant's attorney, Andrew J. Bateman, by telephone at (202) 625-3547. All correspondence should continue to be directed to the address given below.

Respectfully submitted,

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